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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/571,751 | 01/22/2007 | Fumio Kuriyama | 2006_0318A | 9879 |
| 513 7590 09/30/2008 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021 | | | | |
| EXAMINER | | | | |
| WILKINS III, HARRY D | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1795 | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/571,751

Applicant(s)

KURIYAMA ET AL.

Examiner

Harry D. Wilkins, III

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 1-25 and 29-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 3/13/06, 9/19/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group III, species C in the reply filed on 28 August 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelsen et al (US 2004/0069644) in view of Schuler et al (US 6,399,022).

Nelsen et al teach (see abstract, figures and paragraphs 9-26) an apparatus for plating of substrates including a water process chamber (308) configured to bring the surface of the substrate into contact with water for the purpose of removing contamination, including organic contaminants, from the surface of the substrate, a plating chamber (310) configured to plate the surface of the substrate after the pre-cleaning and a frame (shown generally as 300) housing both the water process chamber and the plating chamber.

Thus, the difference between the teachings of Nelsen et al and the presently claimed invention is that Nelsen et al do not teach using ozone water in the water

process chamber. Nelsen et al teach (see paragraph 13) that although deionized water was discussed, that other aqueous solutions could be used to perform the pre-cleaning step.

Schuler et al teach (see abstract, figures and col. 1, lines 12-15 and col. 3, line 41-44) generation of ozone water for the purpose of providing a cleaning fluid for removing contaminants, particularly organic contaminants, from the surface of a substrate prior to further processing.

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted the ozone water of Schuler et al for the deionized water of Nelsen et al for performing the pre-cleaning step in the water process chamber because the ozone water would have achieved a better removal of organic contaminants due to the presence of the ozone.

Regarding claim 28, Schuler et al teach (see abstract and figures) that the ozone water generator included a dissolution membrane through which ozone gas was diffused into pure water.

4. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nelsen et al (US 2004/0069644) in view of Schuler et al (US 6,399,022) as applied to claims 26 and 28 above, and further in view of Taylor (US 6,555,170).

The teachings of Nelsen et al and Schuler et al are described above. Further, Schuler et al teach that treatment with the ozone water (see col. 1, lines 12-15) causes both removal of contaminants from the treated surface and also forms an oxide film on the treated surface.

However, it was known in the art of copper electroplating that such surface oxides were detrimental to the copper electroplating step.

Taylor teaches (see col. 1, lines 19-39) that a final acid cleaning step occurs to remove any built up oxides which inhibit efficient plating.

Therefore, it would have been obvious to one of ordinary skill in the art to have added an acid treatment chamber, as suggested by Taylor, to cause removal of any surface oxide film built up by the ozone water treatment of Schuler et al to ensure that the surface oxides do not inhibit the efficient copper electroplating of Nelsen et al.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 26 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 7 of copending Application

No. 10/544,623 in view of Nelsen et al (US 2004/0069644). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '623 application include an ozone water process chamber and a plating chamber as claimed. Placement of the two chambers within a single frame housing is obvious as shown by Nelsen et al in that it was desirable to place the two treatment chambers next to each other so that substrates could be transferred directly from the rinsing unit to the plating unit.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claim 28 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 7 of copending Application No. 10/544,623 in view of Nelsen et al (US 2004/0069644) and Schuler et al (US 6,399,022). Although the conflicting claims are not identical, they are not patentably distinct from each other because the addition of the ozone water generator beyond the scope of claim 26 was an obvious variation for generating the ozone water. Schuler et al show that use of an ozone water generation configured to dissolve an ozone gas in pure water by diffusion and dissolution through an ozone dissolution membrane was a known effective manner in which to generate ozone water for treating semiconductor substrates.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw